78. A method of making an impact absorbing composite, the method comprising:

attaching a plurality of impact absorbing members to a flexible layer, the impact absorbing members being solid and predominantly free of voids;

placing adjacent impact absorbing members in contact with each other, the majority of the impact absorbing members surrounded by at least three adjacent impact absorbing members.

79. A method of making an impact absorbing composite, the method comprising:

attaching a plurality of first impact absorbing members to a flexible layer, the first impact absorbing members being solid and predominantly free of voids and adjacent first impact absorbing members in contact with each other;

attaching a plurality of second impact absorbing members in working relation with the first impact absorbing members, the first impact absorbing members and the second impact absorbing members located on opposite sides of the flexible layer.

REMARKS

This Amendment is submitted in response to the Office Action dated February 12, 2003. In the Office Action, the Examiner rejected 1 and 6-73 and objected to claim 17. With this Amendment, claims 1, 6-36, and 53-73 are canceled, claim 52 is amended, and new claims 74-79 are added. Upon entry of this Amendment, the above-identified application will include claims 37-52 and 74-79.

Claim Rejections Under 35 U.S.C. §102(b) Based Upon The Spertus Patent

In the Office Action, the Examiner rejected claims 1-10, 12-23, 25-31, 33-36, and 53-73 under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3,546,055 to Spertus (subsequently referred to as the "Spertus patent"). In support of this rejection, the Examiner stated::

> See Figures 1-8 and col. 3, lines 40-65, which teaches that polystyrene balls may be molded onto both sides of a sheet with the

material joined through an aperture in the sheet, which may be fibrous.

As indicated above, Applicant has canceled claims 1-10, 12-14, 16-23, 25-31, 33-36, and 53-73. The Examiner's §102(b) rejection of 1-10, 12-14, 16-23, 25-31, 33-36, and 53-73 based on the Spertus patent is therefore moot. Applicant has rewritten claim 15 as new independent claim 74 that includes all of the features of claim 15; consequently, Applicant has canceled claim 15.

New claim 74 reads as follows:

74. An impact absorbing composite, the impact absorbing composite comprising:

a plurality of impact absorbing members, the impact absorbing members being solid and predominantly free of voids; and

a flexible layer, the flexible layer comprising netting or open-meshed fabric, each impact absorbing member attached to the flexible layer.

Despite the Examiner's comments provided above in support of the §102(b) rejection of claim 15 based on the Spertus patent, the Spertus patent does not disclose each and every detail required by claim 15 (now canceled, but rewritten as claim 74). Therefore, consideration and allowance of new claim 74 is respectfully requested.

More specifically, new claim 74 (and corresponding prior claim 15, now canceled) specifies that the flexible layer comprises "netting or open-meshed fabric." New claim 77 likewise specifies that the flexible layer comprises "netting or open-meshed fabric." The Spertus patent calls for use of paper, a textile, or plastic sheet as the flexible sheet. (Col. 3, lines 45-51). None of these listed examples constitutes the "netting or open-meshed fabric," either explicitly or inherently. Thus, the Spertus patent does not disclose each and every detail required by new claims 74 and 77. Consequently, consideration and allowance of new claims 74 and 77 is respectfully requested.

Claim Rejections Under 35 U.S.C. §103(a) Based Upon The Spertus Patent and the Nelson Patent

In the Office Action, the Examiner rejected claims 11, 24, 32, and 37-52 under 35 U.S.C. §103(a) as allegedly being obvious in light of the Spertus patent in view of U.S. 5,322,181

to Nelson (subsequently referred to as the Nelson patent). In support of this rejection, the Examiner provided the following comments:

> Spertus teaches elements molded to both sides of a fabric as taught above. Nelson teaches elements in contact with each other in Figure 26, in order to form an outer surface with good impact absorption. The instant invention claims elements in contact on a sheet and the molding of the elements using mold haves. It would have been obvious to one of ordinary skill in the art to have made the elements of Spertus in contact in order to provide a good impact surface because of the teachings of Nelson. It further would have been obvious to one of ordinary skill in the art to supply the proper conventional molding equipment, such as mold halves, to accomplish the molding step of Spertus.

As indicated above, Applicant has canceled claims 24 and 32. The Examiner's §103(a) rejection of claims 24 and 32 based on the Spertus patent and the Nelson patent is therefore moot. Applicant has added new independent claim 75 that includes all of the features of claim 11; consequently, Applicant has canceled claim 11. Despite the Examiner's rejection and comments, the Spertus patent and the Nelson patent, either separately or in any combination, do not teach, suggest, disclose or make obvious the invention of the above-identified application, as defined in claims 37-52.

We first consider independent claim 37 that the Examiner has rejected as allegedly being obvious in light of the Spertus patent in view of the Nelson patent. Claim 37 reads as follows:

> 37. *A method of forming an impact absorbing composite, the method comprising:*
> *placing a flexible layer into a molding apparatus, the molding apparatus having a plurality of first surfaces that define a plurality of first mold cavity portions and a second surface that defines a second mold cavity portion and, the flexible layer positioned between the first mold cavity portions and the second mold cavity portion, and the first mold cavity portions and the second mold cavity portion collectively forming a mold cavity;*
> *placing polymeric resin in the mold cavity;*
> *expanding the polymeric resin in the mold cavity to form an impact absorbing composite intermediate, the impact absorbing*

> *composite intermediate comprising expanded polymeric resin and the flexible layer; and*
> *finishing the impact absorbing composite intermediate to form the impact absorbing composite.*

The Examiner clearly relies on the Nelson patent only in support of the Examiner's allegation that it would be obvious to place the balls of the Spertus patent in contact with each other. Clearly, the Examiner has no reason to, and does not in fact, rely on the Nelson patent in support of the Examiner's §103(a) rejection of claim 37. Instead, the Examiner merely relies on the details provided at col. 3, lines 40-65 of the Spertus patent and on Figures 1-8 of the Spertus patent in combination with the following allegation as support for the §103(a) rejection of claim 37.

> It further would have been obvious to one of ordinary skill in the art to supply the proper conventional molding equipment, such as mold halves, to accomplish the molding step of Spertus.

The Examiner has not provided any evidence in support of this allegation. Applicant respectfully requests that the Examiner provide adequate evidence in the form of independent documentary evidence, such as a published reference, in support of this allegation. I f the Examiner is relying on personal evidence, Applicant respectfully requests that the Examiner provide an Affidavit expressing personal knowledge, that supports this allegation of the Examiner. Absent such evidence, the Examiner's rejection of claim 37 is unsupported by the evidence and fails to establish a prima facie §103(a) rejection.

Furthermore, even if the Examiner's allegation were adequate evidence, the Spertus patent, at col. 3, lines 40-65, merely suggests that two existing semi-spheres (halves) may be molded (formed) together to create a whole sphere that is located on both sides of the flexible sheet. Even if the semi-spheres (halves) are molded on the flexible sheet, the Spertus patent merely suggests that pre-expanded polystyrene foam material (in forms such as rods or tube) may be positioned on opposing sides of the flexible sheet and than formed (molded or shaped) into the final spherical shape. (Col. 3, lines 52-61). The Spertus patent thus does not teach, suggest, or disclose either "placing polymeric resin in the mold cavity" or "expanding the polymeric resin in the mold cavity to form an impact absorbing composite intermediate," as claim 37 requires. Instead, the Spertus

patent merely teaches the joinder of two existing semi-spheres (halves) or, as the most expansive reading of the Spertus teachings, use of pre-expanded polystyrene foam material that is shaped into the final spherical shape after positioning of the pre-expanded polystyrene foam on opposing sides of the flexible sheet.

Thus, there is no mention or suggestion in the Spertus patent or other evidence of record that "a flexible layer" be placed "into a molding apparatus," as claim 37 requires. Likewise, there is no mention or suggestion in the Spertus patent or other evidence of record about a "molding apparatus having a plurality of first surfaces that define a plurality of first mold cavity portions and a second surface that defines a second mold cavity portion" where the flexible layer "is positioned between the first mold cavity portions and the second mold cavity portion, and the first mold cavity portions and the second mold cavity portion collectively form[ing] a mold cavity," as claim 37 requires. Furthermore, there is certainly no mention or suggestion in the Spertus patent or other evidence of record about "placing polymeric resin in the mold cavity" and "expanding the polymeric resin in the mold cavity to form an impact absorbing composite intermediate," as claim 37 requires. Rather, the Examiner's allegation that the Spertus patent renders the collective details of claim 37 obvious improperly relies on hindsight reconstruction that relies on claim 37 as the road map.

Despite the Examiner's allegations, there is certainly no mention or suggestion in the Spertus patent or other evidence of record about use of mold cavities and expansion of polymeric resin that has been placed in one of the mold cavities, as claim 37 requires. Therefore claim 37 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

Next, we consider claim 39 that reads as follows:

> *39. The method of claim 38 wherein:*
> *the flexible layer has a first major surface and a second major surface that are located on opposing sides of the flexible layer and has internal surfaces that define a plurality of holes that extend through the flexible layer from the first major surface to the second major surface; and*

placing polymeric resin in the mold cavity comprises placing the polymeric resin in the second mold cavity portion and allowing the polymeric resin to pass through the holes of the flexible layer and into the first mold cavity portions.

The Spertus patent does not teach, suggest, or disclose "placing the polymeric resin in the second mold cavity portion and allowing the polymeric resin to pass through the holes of the flexible layer and into the first mold cavity portions" as claim 39 requires. Indeed, as discussed above in connection with the Examiner's §102(b) rejections based on the Spertus patent, the Spertus patent does not even teach, suggest, or disclose use of "netting or open-meshed fabric" or any other material that would allow "the polymeric resin to pass through the holes of the flexible layer and into the first mold cavity portions," as claim 39 requires. Instead, the Spertus patent merely teaches the joinder of two existing semi-spheres (halves) or, as the most expansive reading of the Spertus teachings, use of pre-expanded polystyrene foam material that is shaped into the final spherical shape after positioning of the pre-expanded polystyrene foam on opposing sides of the flexible sheet. There is no teaching regarding "polymeric resin" placement, as claim 39 requires. Rather, the Examiner's allegation that the Spertus patent and Nelson patent render the collective details of claim 39 obvious improperly relies on hindsight reconstruction that relies on claim 39 as the road map.

Despite the Examiner's allegations, there is certainly no mention or suggestion in the Spertus patent or other evidence of record about "placing the polymeric resin in the second mold cavity portion and allowing the polymeric resin to pass through the holes of the flexible layer and into the first mold cavity portions" as claim 39 requires. Therefore claim 39 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

Next, we consider claim 44 that reads as follows:

44. The method of claim 37 wherein the expanded polymeric resin comprises closed cell polymeric foam.

The Spertus patent does not teach, suggest, or disclose use of closed cell polymeric foam, as claim 44 requires. Furthermore, the Nelson patent does not teach, suggest, or disclose formation of the spheres 14 of the Spertus patent from closed cell polymeric foam, as claim 44 requires. Despite the

Examiner's allegations, there is no mention or suggestion in the Spertus patent or other evidence of record about formation of the spheres 14 of the Spertus patent from closed cell polymeric foam, as claim 44 requires. Therefore claim 44 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

Next, we consider claim 50 that reads as follows:

> *50. The method of claim 37 wherein the flexible layer comprises a net or open-meshed fabric.*

Claim 50 thus specifies that the flexible layer comprises "netting or open-meshed fabric." The Spertus patent specifies paper, a textile, or plastic sheet as the flexible sheet. (Col. 3, lines 45-51). None of these listed examples constitutes the "netting or open-meshed fabric," either explicitly or inherently. Thus, the Spertus patent does not teach, suggest, or disclose use of "netting or open-meshed fabric," as claim 50 requires. Furthermore, the Nelson patent does not teach, suggest, or disclose use of a flexible layer that comprises "netting or open-meshed fabric," as claim 50 requires. Despite the Examiner's allegations, there is no mention or suggestion in the Spertus patent or other evidence of record about the flexible layer of the Spertus patent comprises "netting or open-meshed fabric," as claim 50 requires. Therefore claim 50 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

Next, we consider claim 51 that reads as follows:

> *51. The method of claim 37 wherein:*
> *the impact absorbing composite intermediate comprises a plurality of first impact absorbing members, the first impact absorbing members formed in the first mold cavity portions; and*
> *finishing the impact absorbing composite intermediate comprises:*
> *removing excess expanded polymeric resin to form a plurality of second impact absorbing members, the first impact absorbing members and the second impact absorbing members located on opposing sides of the flexible layer.*

The Spertus patent does not teach, suggest, or disclose removal of "excess expanded polymeric resin to form a plurality of second impact absorbing members," as claim 51 requires. Instead, the Spertus patent merely teaches the joinder of two existing semi-spheres (halves) or, as the most expansive reading of the Spertus teachings, use of pre-expanded polystyrene foam material that is molded into the final spherical shape after positioning of the pre-expanded polystyrene foam on opposing sides of the flexible sheet. Furthermore, the Nelson patent does not teach, suggest, or disclose removal of "excess expanded polymeric resin to form a plurality of second impact absorbing members," as claim 51 requires. There is no teaching in the art of record regarding removal of "excess expanded polymeric resin to form a plurality of second impact absorbing members," as claim 51 requires. Rather, the Examiner's allegation that the Spertus patent and Nelson patent render the collective details of claim 51 obvious improperly relies on hindsight reconstruction that relies on claim 51 as the road map.

Despite the Examiner's allegations, there is certainly no mention or suggestion in the Spertus patent or other evidence of record about removal of "excess expanded polymeric resin to form a plurality of second impact absorbing members," as claim 51 requires. Therefore claim 51 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

We then consider claim 52 that reads as follows:

> *52. (Amended) The method of claim 51 wherein:*
> *removing excess expanded polymeric resin means thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination.*

The Spertus patent does not teach, suggest, or disclose removal of "excess expanded polymeric resin" by "thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination," as claim 52 requires. Instead, the Spertus patent merely teaches the joinder of two existing semi-spheres (halves) or, as the most expansive reading of the Spertus teachings, use of pre-

expanded polystyrene foam material that is molded into the final spherical shape after positioning of the pre-expanded polystyrene foam on opposing sides of the flexible sheet. Furthermore, the Nelson patent does not teach, suggest, or disclose removal of "excess expanded polymeric resin" by "thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination," as claim 52 requires. There is no teaching in the art of record regarding removal of "excess expanded polymeric resin" by "thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination," as claim 52 requires. Rather, the Examiner's allegation that the Spertus patent and Nelson patent render the collective details of claim 52 obvious improperly relies on hindsight reconstruction that relies on claim 52 as the road map.

Despite the Examiner's allegations, there is certainly no mention or suggestion in the Spertus patent or other evidence of record about removal of "excess expanded polymeric resin" by "thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination," as claim 52 requires. Therefore claim 52 is believed allowable over the Examiner's present §103(a) rejection based upon the Spertus patent and the Nelson patent.

Finally, we consider new independent claim 75 that includes all of the features of claim 11; as noted above, Applicant has canceled claim 11. New independent claim 75 reads as follows:

> *75. An impact absorbing composite, the impact absorbing composite comprising:*
>
> *a plurality of impact absorbing members, each impact absorbing member being solid and predominantly free of voids; and*
>
> *a flexible layer, each impact absorbing member attached to the flexible layer, wherein:*
>
> *adjacent impact absorbing members are in contact with each other; and*
>
> *the majority of the impact absorbing members are surrounded by at least three adjacent impact absorbing members.*

In support of the prior rejection of claim 11, now canceled, under §103(a) rejection based on the Spertus patent and the Nelson patent, the Examiner stated:

> *It would have been obvious to one of ordinary skill in the art to have made the elements of Spertus in contact in order to provide a good impact surface because of the teachings of Nelson.*

This statement of the Examiner is erroneous to the extent the Examiner chooses to apply it to claim 75 that includes the elements of claim 11. The Spertus patent requires that the spherical balls 14 be spaced apart from each. This spacing may vary but must always be sufficient to support the desired flexibility of the Spertus mat:

> The spacing of the balls **14** one from the other may vary. They should be sufficiently spaced one from the other to afford the desired flexibility necessary for the mat to assume the contour of the article being packaged or packed . . . .

Col. 3, lines 24-28, of the Spertus patent. Thus, despite the Examiner's allegation to the contrary, it would not be obvious to place the Spertus balls into contact with each other, allegedly per the Nelson patent, since doing so, rather than spacing the Spertus balls apart, would destroy an important and intended function of the Spertus mat, namely providing the Spertus matt with a desired level of flexibility.

Despite the Examiner's allegations, it would not be obvious to place the Spertus balls into contact with each other, allegedly per the Nelson patent," as new claim 75 requires. Therefore claim 75 is believed allowable. New claims 76, 78, and 79 are believed allowable for reasons analogous to those pertaining to new claim 74 that are provided above..

Claims 37, 39, 44, 50-52, 75, and 78 are each allowable. Claims 38, 40-43, and 45-49 are also allowable, since claims 38, 40-43, and 45-49 each depend from allowable claim 37. Claims 39, 44, and 50-52 are also allowable for an additional reason, since claims 38, 40-43, and 45-49 each depend from allowable claim 37. Consequently, Applicant respectively requests that the Examiner reconsider and withdraw the rejections of claims 37-52 under 35 U.S.C. §103(a) based on the Spertus patent and the Nelson patent and that claims 37-52 be allowed. Furthermore, Applicant respectfully requests that the Examiner consider and allow new claims 75-76 and 78-79.

Claim Objection By the Examiner

In the Office Action, the Examiner objected to claim 17 under 37 C.F.R. §1.75(c) as allegedly "being of improper dependent form for failing to further limit the subject matter of a previous claim." As indicated above, claim 17 has been canceled, which makes the Examiner's objection to claim 17 under 37 C.F.R. §1.75(c) moot.

New Claims Added by Applicant

As indicated above, Applicant has added new claims 74-79. Support for the features of new claims 74-79 is believed to exist throughout the above-identified application. New claims 74-79 are each believed allowable. Consequently, Applicant respectively requests that the Examiner consider and allow new claims 74-79.

CONCLUSION

Claims 37-52 and 74-80 are each believed allowable. Consequently, Applicant respectfully requests reconsideration and allowance of claims 37-52, along with consideration and allowance of new claims 74-79. The Examiner is invited to contact Applicant's below-named attorney to discuss any aspect of the above-identified application and facilitate allowance of this application.

Respectfully submitted,
KINNEY & LANGE, P.A.

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APPENDIX:
MARKED UP VERSION OF CLAIM AMENDMENTS

Claims 1, 6-36 and 53-73 are canceled.

Claim 52 is amended as follows:

52. (Amended) The method of claim [37] 51 wherein:

removing excess expanded polymeric resin means thermally cutting excess expanded polymeric resin, mechanically cutting or routing excess expanded polymeric resin, vaporizing excess expanded polymeric resin, or any of these in any combination.

New claims 74-79 are added as follows:

--74. An impact absorbing composite, the impact absorbing composite comprising:

a plurality of impact absorbing members, the impact absorbing members being solid and predominantly free of voids; and

a flexible layer, the flexible layer comprising netting or open-meshed fabric, each impact absorbing member attached to the flexible layer.--

--75. An impact absorbing composite, the impact absorbing composite comprising:

a plurality of impact absorbing members, each impact absorbing member being solid and predominantly free of voids; and

a flexible layer, each impact absorbing member attached to the flexible layer, wherein:

adjacent impact absorbing members are in contact with each other; and

the majority of the impact absorbing members are surrounded by at least three adjacent impact absorbing members.--

--76. An impact absorbing composite, the impact absorbing composite comprising:

a plurality of first impact absorbing members, the first impact absorbing members being solid and predominantly free of voids;

APPENDIX:
MARKED UP VERSION OF CLAIM AMENDMENTS

a plurality of second impact absorbing members attached in working relation with the first impact absorbing members; and

a flexible layer, the first impact absorbing members attached to the flexible layer, wherein:

adjacent first impact absorbing members are in contact with each other; and

the first impact absorbing members and the second impact absorbing members are located on opposite sides of the flexible layer.--

--77. A method of making an impact absorbing composite, the method comprising:

attaching a plurality of impact absorbing members to a flexible layer, the impact absorbing members being solid and predominantly free of voids and the flexible layer comprising netting or open meshed fabric.--

--78. A method of making an impact absorbing composite, the method comprising:

attaching a plurality of impact absorbing members to a flexible layer, the impact absorbing members being solid and predominantly free of voids;

placing adjacent impact absorbing members in contact with each other, the majority of the impact absorbing members surrounded by at least three adjacent impact absorbing members.--

--79. A method of making an impact absorbing composite, the method comprising:

attaching a plurality of first impact absorbing members to a flexible layer, the first impact absorbing members being solid and predominantly free of voids and adjacent first impact absorbing members in contact with each other;

attaching a plurality of second impact absorbing members in working relation with the first impact absorbing members, the first impact absorbing members and the second impact absorbing members located on opposite sides of the flexible layer.--